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REMARKS

Claims 1-21 remain of record in this application. Claims 2-12 and 15-21 have been amended. No claims have been added or cancelled.

Support for the amendments is inherent in the original disclosure. Claims 2-12 and 15-21 have merely been amended to use language consistent with independent claim 1.

Rejection Under 35 U.S.C. 102

Claims 1-3, 5-8, and 10-15 have been rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art. The Examiner has taken the position that the activated carbons described on page 4 of the specification as having a high surface area anticipate the claims. Applicants respectfully disagree.

Page 4, paragraph nos. 0007-0009, of the specification describes the prior art publications of Chen, Martin, and Tay. Copies of Chen and Tay have been supplied with an Information Disclosure Statement submitted September 10, 2007, one day prior to the mailing date of this Office action. Chen, Martin, and Tay all disclose production of activated carbons from sewage sludge. Chen and Martin disclosed that the activated carbons possessed

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BET surface areas of 647 and 257 m²/g, respectively, while that of Tay varied from approximately 463 to 542 m²/g.

The instant invention is drawn to a process for the creation of activated carbon from poultry manure which possess enhanced activity for the adsorption of metal ions. The activated carbons of this invention are produced by carbonization (also known as pyrolysis) of the manure, followed by activation. The resultant activated carbons produced from poultry manure possess a high BET surface area, at least about 200 m²/g, and exhibit high metal ion adsorption capabilities in comparison to conventional activated carbons. In addition, these activated carbons prepared from poultry manure have a high phosphate ion content, at least about 4% by weight, which applicants believe provides the above-mentioned ion adsorption capabilities. This is not disclosed or suggested by the prior art.

Although the activated carbons disclosed by Chen, Martin, and Tay exhibit high BET surface areas, they are prepared from a different starting material, sewage sludge, rather than poultry manure. Because the prior art activated carbons are prepared from different materials, they would not possess the same properties, and particularly would not exhibit the same high capacity for metal ion adsorption, as activated carbons produced

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from poultry manures in accordance with applicants' invention. The effect of the starting material on the properties of activated carbons, and particularly the difference in adsorption properties even among materials having similar high BET surface areas, is particularly apparent in Examples 2 and 3 of the instant specification wherein applicants compared a variety of activated carbons with those prepared from poultry manures. As shown in Tables 2 and 3, although other activated carbons also possessed equal or higher BET surface areas than those prepared from poultry manures, all were significantly less effective adsorbents for metal ions. Thus, while the activated carbons of by Chen, Martin, and Tay exhibit high BET surface areas, because they are not produced from poultry manure they would not exhibit the same metal ion adsorption capabilities as the claimed activated carbons.

In addition, dependent claims 14 and 21, limited to activated carbons having a phosphate ion content greater than 4.0% by weight, further differentiate over the prior art. As disclosed in the specification at paragraph nos. 0017, 0025, and 0026, activated carbons produced from poultry manure possess a high phosphate ion concentration. These negatively charged phosphate ions effectively adsorb high levels of a variety of

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positively charged metal ions, including Cu(II), Pb(II), Zn(II), Cd(II), Ni(II), Cr(III), Hg(II), Fe(II), Fe(III), Al(III), Co(II), Sn(II), Sn(IV), Ca(II) and Mg(II). This is not disclosed or suggested by the prior art.

Rejection Under 35 U.S.C. 103

Claims 1, 2, 7, and 9-21 have been rejected under 35 U.S.C. 103 as being unpatentable over Carugati in view of Landis. The Examiner has taken the position that it would have been obvious to substitute the manure of Landis for the coal of Carugati as a source of humic acid for preparing activated charcoal. Applicants respectfully disagree.

Carugati discloses a process for preparing activated charcoal having a high surface area from regenerated humic acid. This regenerated humic acid is only obtained from oxidized coal (col. 1, line 67 to col. 2, line 2 and col. 2, lines 58-60). Moreover, Carugati discloses that regenerated humic acids from sources other than coal "are decidedly different" and possess a variety of different properties (col. 2, lines 44-57).

Landis discloses a foundry sand used in molds for casting molten metals in desired shapes. The patent discloses that the sand may include humic acid, and further discloses that the humic

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acid may be derived from a variety of sources, including manure. The reference does not specifically disclose poultry manure or any other manure source.

The instant invention was described in the response to the §102 rejection over the admitted prior art, *supra*.

Applicants respectfully submit that the disclosure of Carugati would teach away from the combination of references suggested by the Examiner. Coal is the only disclosed source for the humic acids of Carugati. Indeed, while Carugati acknowledges that humic acids are available from other sources, and specifically those of "natural origin", the patent expressly teaches that such humic acids "are decidedly different" from those from coal. Specifically, Carugati discloses that humic acids from coal possess higher molecular weights, higher aromatic contents, higher levels of oxygen-containing functional groups than humic acids from natural sources (col. 2, lines 44-57). In spite of the acknowledged existence of these other sources of humic acids, Carugati concludes that the humic acids suitable for use in preparing activated charcoal "are those which can be obtained by means of any process of coal oxidation" (col. 2, lines 58-60, emphasis added). Thus, applicants submit that a practitioner of ordinary skill in the art would have no

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motivation to submit a humic acid from another source such as manure for humic acid from coal, and that if anything the disclosure of Carugati would teach away from such a substitution. This is particularly evident considering that the disclosure of Landis is drawn to foundry sands, and would provide no suggestion that manures could be used as a suitable source of humic acid for making activated carbon.

In addition, even if the references were combined as suggested, a position which is not conceded, applicants submit that the references would not teach the claimed invention. Again, the activated carbons of the instant invention are prepared from poultry manure. Poultry manure is not disclosed by either of the references. As discussed in the response to the §102 rejection over the admitted prior art, the use of poultry manure produces activated carbons having a high BET surface area, high phosphate ion content, and a high capacity for adsorption of metal ions. This is not disclosed or suggested by the prior art.

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For the reasons stated above, claims 1-21 are believed to distinguish over the prior art of record. Allowance thereof is respectfully requested.

Respectfully submitted,



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